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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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December 7, 2015 15-NWP-208

Mr. Ray J. Corey, Assistant Manager for the River and Plateau
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A5-11
Richland, Washington 99352

Re: Department of Ecology's (Ecology) Comments on the *2015 Groundwater Monitoring Plan for the 183-H Solar Evaporation Basins*, DOE/RL-2015-28, Draft A

Dear Mr. Corey:

Enclosed are Ecology's comments on the 2015 Groundwater Monitoring Plan (Plan) for the 183-H Solar Evaporation Basins (SEB).

Ecology has concerns regarding the removal of nitrate as a contaminant of concern from the Plan. Nitrate is a residual contaminant from the waste disposed at 183-H SEB, and is therefore monitored as indicated in the *183-H Solar Evaporation Basins Postclosure Plan*, DOE/RL-97-48, in the *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8C, for the Treatment, Storage, and Disposal of Dangerous Waste*, WA7890008967.

Ecology requires that nitrate continue to be monitored in the Groundwater Monitoring Plan (enclosure).

If you have any questions, please contact me at nina.menard@ecy.wa.gov or (509) 372-7941, or Brian Johnson, Environmental Specialist, at brian.johnson@ecy.wa.gov or (509) 372-7908.

Sincerely,

Nina M. Menard
Environmental Restoration Project Manager
Nuclear Waste Program

bj/aa
Enclosure

cc: See page 2

cc electronic w/enc:
Dennis Faulk, EPA
Chris Guzzetti, EPA
Steve Balone, USDOE
Michael Cline, USDOE
Jim Hanson, USDOE
Jane Borghese, CHPRC
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Environmental Portal
Hanford Facility Operating Record
USDOE-RL Correspondence Control

cc w/enc:
Steve Hudson, HAB
Administrative Record: 100-HR-3
NWP Central File

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NWP Reader File

REVIEW COMMENT RECORD	Date 11/23/2015	Review No.
	Project No. 183-H SEB	Page Page 1 of 9

Document Number(s)/Title(s) **DOE/RL-2015-28 Draft A, 2015 Groundwater Monitoring Plan for the 183-H Solar Evaporation Basins**	Program/Project/Building Number NWP	Reviewer Washington Department of Ecology	Organization/Group NWP/Cleanup	Location/Phone 372-7926

Item	Page #/section # Line #	Comment (s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/ problem indicated.)
1.	Title	Remove the "2015". This implies that it is only for that calendar year and is not permanent. It should read, "Final Status Groundwater Monitoring Plan for the 183-H Solar Evaporation Basins".
2.	p. iii, Exec. Summary, line 24 and elsewhere in the document	Remove "RCRA" to read "modified closure". RCRA and the dangerous waste regulations do not apply to "modified closure". This is a Permit condition only in Rev. 8C of the Hanford Permit.
3.	p. iv, Exec. Summary, line 15	Cite the Wayne Soper letter of 1997 as the reason it was deferred to the CERCLA program.
4.	p. iv, Exec. Summary, line 22	Change 40 CFR 261 to WAC 173-303. All citations will be to the dangerous waste regulations not the federal regulations because this is a final status unit.
5.	General	All citations to the federal regulations (40 CFR) should be to WAC 173-303 instead. Make this change throughout the document.
6.	p. iv, Exec. Summary, line 22	Nitrate and fluoride are by-products of dangerous waste constituents that were part of the waste in 183-H SEB. Therefore, they are dangerous waste constituents according to WAC 173-303-070. Rewrite the text to state Fluoride is no longer being monitoried under the RCRA groundwater monitoring program because it is below background and has been below its background groundwater concentration since XXXX. Nitrate is no longer being monitored under the RCRA groundwater monitoring program because it is being monitored through the CERCLA remedial action.
7.	p. v, Exec. Summary, line 7.	Replace the term "detection monitoring" with "corrective action monitoring".

8.	p. v, Exec. Summary, line 19	Delete this line. It is an option only.
9.	p. v, Exec. Summary, line 29	Delete this sentence, "Active extraction wells east and northeast of the site enhance the flow in that direction." Active extraction wells exist all around the waste site and flow has been known to reverse during the summer months related to river stage influences.
10.	p. 1-1, Sec. 1, line 6	The Hanford Permit is tittled, "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion". Please change the title accordingly.
11.	p. 1-1, Sec. 1, line 8	Change "provisions" to "conditions" and add the words, "in the Permit" to read, "…and the unit was closed in 1997 under modified closure conditions in the Permit with specified remedial measures under post-closure care…"
12.	p. 1-1, Sec. 1, line 14	Insert "Dangerous Waste Portion" after Permit and the cited reference to the Permit.
13.	p. 1-1, Sec. 1, lines 27-43	Provide citatations to all sentences that describe these closure actions. As is, no supporting documentation exists to definitively state that the test pit was dug from the bottom of the engineered structure. This is an assumption. It is not supported by the closure plan or post-closure plan.
14.	p. 1-1, Sec. 1, line 40	Rewrite this sentence. No where is "closed-out" written. Rewrite the sentence to state, "Because of the presence of contamination extending from 15 to 25 ft below the Basin 1 structure, waste site 116-H-6 underwent a modified closure in accordance with the Hanford Permit in 1997, which included groundwater monitoring."
15.	p. 1-1, Sec. 1, line 45 and p. 1-2, line 1	Provide what is meant by the parenthetical "(those facilities still engaged in the permiting process)". It is not clear what this represents.
16.	p. 1-2, Sec. 1, line 28	Insert a new sentence that reads, "The other constituents of nitrate and uranium will be monitored under the 100-HR-3 OU pump and treat system while fluoride and technetium-99 will no longer be monitored."
17.	Figure 1-2	Use figure 1-2 of the Post-Closure Plan (DOE/RL-97-48). State that this is a Schematic Plan View in the caption.
18.	p. 2-1, Sec. 2, lines 13-14	Provide that this proposed plan document is DRAFT.
19.	p. 2-1, Sec. 2.1 line 22	Provide what "facility", because according to the Permit the Hanford Site is the "facility". Please state "basins" instead of "facility"

20.	p. 2-1, Sec. 2.1 line 22	Concrete from basins 5 through 16 still remain. Please clarify how or if the basins were demolished or simply backfilled with clean soil.
21.	p. 2-1, Sec. 2.1 line 28	Provide a citation to last sentence in this parapgraph that supports the waste stream going to 183-H SEBs.
22.	p. 2-2, Sec. 2.1, line 7-9	Provide supporting evidence to "In Basin 1, a test pit was excavated to a depth of 7.6 m (25 ft) below the structure for a total depth of about 12 m (40 ft) below grade (the depth of groundwater at the time of excavation). No documentation supports this statement.
23.	p. 2-2, Sec. 2.1, line 13	Add "appropriately" between "and" and "disposed" to read, "transported from the site and appropriately disposed."
24.	p. 2-2, Sec. 2.2, line 20-21	Provide the compliance groundwater monitoring plan that was initated in 1986 at this location.
25.	p. 2-2, Sec. 2.2, Line 23 and 27	Conflict exists between the two dates. EPA gives authority in Nov. 1987, yet Washington State was authorized in August 1987. This means Washington State had authorization before EPA authorized it. Please provide clarification to this paragraph of the chronlology of events. EPA delegated RCRA-based program to Ecology on January 31, 1986, not November 1987 or delete this discussion since it is in the Permit and provides no real value.
26.	p. 2-2, Sec. 2.2, Lines 32-34	Rewrite the first sentence to read, "Dangerous waste is regulated under the Hazardous Waste Management Act (RCW 70.105) and its implementing regulations (WAC 173-303) which implements RCRA for Washington State." Delete 40 CFR 265. This standard is an interim status requirement and a federal standard when final status requirments are required.
27.	p. 2-2, Sec. 2.2, Line 39	Change to read, "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion For the Treatment, Storage, and Disposal of Dangerous Waste". This is the title of the Hanford Facility RCRA Permit.
28.	p. 2-4, Sec. 2-2, Lines 1-5	Change this parapgraph to cite what DOE/RL-88-04 actually states. The groundwater monitoring program will continue throughout the closure/post-closure period. The section is titled, "Monitoring Plan Proposed to be Conducted Until Issuance of Final Status Post-Closure Permit. This document is a 1990 document and does not contradict the permit. Closure occurred in 1997 and a final status groundwater monitoring plan was issued in 1995.
29.	p. 2-4, Sec. 2-2, Line 3	Delete sentence, "This was an apparent contradiction in the permit."
30.	p. 2-4, Sec. 2-2, Line 5	Add at the end of the sentence, "and in the requirements established in Chapter 3.0 of Part VI, Post-Closure Unit 2.

31.	p. 2-4, Sec. 2.2, Lines 9-11	Remediation was not deferred to the CERCLA program until May 1997. Please provide a correct discussion of the chronological events. As written, this has not been done.
32.	p. 2-4, Sec. 2.2, Lines 11-12	Delete the last sentence, "The RCRA monitoring continued under the compliance program (WHC-SD-EN-AP-180)." This is incorrect. According to Letter titled "Excceedance of Concentration Limits in Groundwater at 183-H Solar Evaporation Basins" notification was given in this letter dated September 1996. Exceedances occurred in the Fall 1995 and on the spring 1996 sampling event (confirmation resampling). After this point, a new monitoring plan was created.
33.	p. 2-4, Sec. 2.2, Lines 13	Corrective action is a RCRA term. Change to read "Remedial actions under CERCLA to address chromium groundwater contamination in the 100-H Area was initiated as part of a CERCLA remediation activities through a pump and treat system."
34.	p. 2-4, Sec. 2.2, Lines 23	Delete the word "RCRA" between "modified" and "closure (soil)"to read "a modified closure (soil) was approved by…"
35.	p. 2-4, Sec. 2.2, Lines 26	Delete the words, "even though these are not dangerous wastes". This is subjective and is not based on the regulations. Both nitrate and fluoride are breakdown chemicals from the waste disposed at 183-H.
36.	p. 2-4, Sec. 2.2, Lines 31	Change "closed-out" to "modified closed under the RCRA Permit (Soper, 1997).
37.	p. 2-4, Sec. 2.3, Line 44	Insert "of" between "indicate that some" and "the waste was corrosive" to read "indicate that some of the waste was corrosive"
38.	p. 2-5, Sec. 2.3, Line 4	Provide a citation at the end of "disposal". A citation is needed to provide where this information was taken.
39.	p. 2-4 and 2-5, Section 2.3	Provide how all these dangerous waste constituents were disposed after closure.
40.	p. 2-4 and 2-5, Section 2.3	Provide if these dangerous waste constituents were detected in the soil and groundwater.
41.	p. 2-13, Sec. 2.5, Line 6-8	Provide the "limited suite of analytes" that were sampled.

42.	p. 2-13, Sec. 2.5, Line 6	Provide the well numbers for the one well drilled in 1974 and three in 1983.
43.	p. 2-13, Sec. 2.5, Lines 6-8	Provide the groundwater monitoring plan that was used in the early 1970s or delete this discussion entirely.
44.	p. 2-13, Sec. 2.5, Lines 6-8	Basin 1 was recognized leaking in 1978. This does not correspond to the "early 1970s. Provide the reference that Basin 1 was leaking in the "early 1970s. Provide information in this document how they knew Basin 1 was leaking.
45.	p. 2-13, Sec. 2.5, Lines 15-19	Provide the actual suite of analytes including which metals, anions, and selected organic constituents were analyzed.
46.	p. 2-16, Sec. 2.5, Line 6	Delete "and during the post-closure period". On page III-53 of DOE/RL-88-04, the sampling program lasted until post-closure permit (beginning of post-closure care period).
47.	p. 2-16, Sec. 2.5, Line 23	Should be "PNNL-11573" not PNL-11573. Add a "N"
48.	p. 2-16, Sec. 2.5, Line 25	Change "correction" to "corrective".
49.	p. 2-16, Sec. 2.5, Line 25	Rewrite sentence to read, "The corrective action was implemented through the interim remedial action under CERCLA for the 100-HR-3 Groundwater OU." Change "deferred to" to "implemented through".
50.	p. 2-16, Sec. 2.5, Line 30	Insert the sentence, "None of these wells are upgradient wells because of changes in the flow system from pump and treat activities and river stage effects."
51.	p. 2-16, Sec. 2.5, Line 34	Add to the end of the sentence, "because of previous releases from Basin 1" so the sentence will read, "Fluoride was also monitored as an indicator of 183-H contamination in groundwater because of previous releases from Basin 1."
52.	p. 2-16, Sec. 2.5, Line 32	Provide which anions and selected metals are being analyzed.
53.	p. 2-18, Figure 2-9	Provide if this includes July.
54.	p. 2-18, Figures 2-8 and 2-9	Provide why August is not included in the analysis of the plume maps. August is the highest hexavalent chromium sampling month at times and it is not included on either map (High River Stage and Low River Stage).
55.	p. 2-20, Sec. 2.5, line 9	Discussion in previous paragraphs details the progression of wells used in the monitoring network, this sentence infers that one of the four wells in the network has been dropped but no clear discussion of which of wells considered the "three existing monitoring wells…" are. Please clarify here which well is dropped and why.

56.	p. 2-20, Sec. 2.6, lines 27-29	This sentence does not make sense. Please rewrite this sentence, "Source remediation removed the engineered structure and soil contaminants underneath the 183-H Solar Evaporation Basin as necessary to reduce or eliminate the potential for direct exposure migration through the vadose zone to the groundwater, and wind-blown suspended particles." Removing the engineered structure removed the direct contact and wind-blown suspended particles. Removing the structure and the soil beneath Basin 1, reduced the amount of contaminants in the vadose zone leaching to groundwater reducing impacts to groundwater. As written, direct exposure migration through the vadose zone to the groundwater makes no sense. Direct exposure can not migrate through the vadose zone to groundwater.
57.	p. 2-20, Sec. 2.6, lines 34-35	Provide a citation for contaminants left at closure. Based on DOE/RL-97-48, fluioride, and nitrate were detected in the soil at 15 ft below the basin structure. No other contaminant was reported that exceeded Method C standards. Hexavalent chromium was not identified in deep soils.
58.	p. 2-20, Sec. 2.6, line 36	Provide which "test pit sample results" is being cited.
59.	p. 2-20, Sec. 2.6, lines 36-45	Provide how deep these boreholes and test pit went in reference to the soil data presented.
60.	p. 2-20, Sec. 2.6, lines 36-45	Provide the maximum extent of contamination, for all contamianants for completeness (tritium even if it does not exceede any standard.
61.	p. 2-21, Sec. 2.6, lines 1-3	Provide for the time span from 2009 to present whether hexavalent chrpomium and nitrate were detected at 183-H.
62.	p. 2-21, Sec. 2.6, lines 11-16	Provide if these mechanisms are still ongoing or not..
63.	p. 2-23, Sec. 2.7, Table 2.2, Compliance Period	Provide the compliance period for the 183-H SEB unit. It would be from 1973 to 1997 (closure)
64.	p. 3-1, Sec. 3.1, Line 14	Text states "(typically April through August)" the map (Figure 2-9) is from April to July. It is not clear if the data for July and August are included on the map. The text does not match that on the map. Please make consistent.
65.	p. 3-1, Sec. 3.1, Lines 19-29	Sampling events for all wells in this DW monitoring program will occur over a one week period. The data is meaningless for statistical analysis if taken over a month or quarter period.

66.	p. 3-1, Sec. 3.2, Line 39	Change background to below 48 ug/L. Background in the surrounding unconfined aquifer are below 48 ug/L, the MTCA cleanup level and level of cleanup required under MTCA and the proposed plan for 100-HR-3 OU. Therefore, this should be the same value for background concentrations.
67.	p. 3-2, Sec. 3.4, Lines 21-22	The 183-SEB is closed. Remove the phrase, "and the site will be closed and."
68.	p. 3-2, Sec. 3.4, Lines 35-36	Provide the proof that "Chromium concnetrations from Well 199-H4-12C are from historical releases at other sources and not attributable to the 183- SEBs."
69.	p. 3-2, Sec. 3.4, Lines 38-39	Delete the phrase, "and better represents the groundwater conditions at the 183-H Solar Evaporation Basins." This phrase is an option and can not be supported.
70.	p. 3-5, Sec. 3.5, Line 5	Provide whom will "accept" these two wells (199-H4-88 and 199-H4-89).
71.	p. 3-5, Table 3-3, Justification Summary	Delete the phrase, "are not dangerous wastes and" This phrase is incorrect, because nitrate is a residual contaminant from the waste disposed at 183-H SEB and is therefore monitored as indicated in the Post-Closure Plan in the Permit (DOE/RL-97-48).
72.	p. 3-5, Table 3-3, Justification Summary	Provide what the anions and metals that will be collected under CERCLA
73.	p. 3-5, Table 3-3,	Nitrate still needs to be monitored as a dangerous waste under this plan with the 45 mg/L standard.
74.	p. 3-6, Table 3-3, Concentration Limit, Current Plan and Justification Summary	Provide the background value as of 2014 which would be 20 mg/L, not 100 ug/L based on the two chromium maps (Figures 2-8 and 2-9). Text states the background value is 48 ug/L. Based on WAC 173-303-645(8)(a)(i) of
75.	p. 3-6, Table 3-3, Well Network and Justification Summary	Delete the phrase "and better represents the groundwater conditions."
76.	p. 3-7, Sec. 3.6, Line 7	Delete "dangerous waste and, therefore, includes monitoring only for…"

77.	p. 3-7, Sec. 3.6, Line 10-11	Nitrate should stay in this monitoring plan. Rewrite this sentence to read, "Uranium, technetium-99 and fluoride are no longer monitored under this monitoring plan."
78.	p. 3-7, Sec. 3.6, Lines 13	Add "including nitrate, uranium, and technetium-99.
79.	p. 3-8, Sec. 3-6, Line 24	Based on the information presented, the concentration limit for chromium (filtered) is 48 ug/L, not 100 ug/L. Change the document accordingly.
80.	p. 4-1, Sec. 4.2, Line 8	Change this sentence to read, "...evaluation during the corrective action is to monitor the trend of the concentration of filtered total chromium to confirm that the corrective action is progressing as expected."
81.	p. 5-1, Sec. 5	DOE/RL-88-04 should be Rev. 3 not Rev. 1 dated 1991.
82.	p. 5-3, Sec. 5	WA7890008967 reference: This is not the title of the document. The title of the document is "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, For the Treatment, Storage, and Disposal of Dangerous Waste, Revision 8C. Please change.
83.	p. A-6, Sec. A2.3, Line 16	WAC 173-303-645(5) is the Concentration Limit requirements not the Dangerous Constituents requirements. Change to WAC 173-303-645(4) instead.
84.	p. A-16, Sec. A3.3.1, Lines 1-4	This sampling protocol resembles a duplicate more than a split sample. Typically, a large sample is homogenized before being spilt into smaller samples for separate lab analysis.
85.	p. A-19, Sec. A4	Provide when and where DOE and Ecology get notified of assessment findings.
86.	p. B-4, Sec. B2.1	No decontamination of sampling equipment is provided. Provide the pertinent detail of the procedure in summary format. The procedure will change with the basic decontamination protocols. Provide the decontamination process in this section.
87.	p. B-13, Sec. B6	Provide why dangerous waste requirements are not used. CERCLA requirements are inappropriate for dangerous waste management.
88.	p. C-1, Table C-2	The open intervals for several of the wells are missed calculated according to the elevation tops and bottoms. These are wells H4-8 (should be 3.0 m [9.9 ft]), and H4-84 (should be 3.8 m[12.5 ft]). Provide Depth to Water (DTW) in elevation (meters and feet) to determime the remaining water in these wells.
89.	p. D-1, Sec. D1, Line 6	Change "Chapter 1" to "Unit 2".

90.	p. D-1, Sec. D1, Line 8	The specifc concentration limit is actually 122 ug/L in the Permit under Chapter 3 Part VI, Unit 2, not 100 ug/L. Section 3.1.1.2 of DOE/RL-97-48 provides the same concentration value for filtered total chromium of 122 ug/L. This document will change it to 48 ug/L, not 100 ug/L.
91.	p. D-7, Sec. D2	WA7890008967 reference: This is not the title of the document. The title of the document is "Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, For the Treatment, Storage, and Disposal of Dangerous Waste, Revision 8C. Please change.